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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/567,415

02/06/2006

Marc D. Andelman

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12/29/2009

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EXAMINER

MENDEZ, ZULMARIAM

ART UNIT

PAPER NUMBER

1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,415	<b>Applicant(s)</b> ANDELMAN ET AL.	
	<b>Examiner</b> ZULMARIAM MENDEZ	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 34 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/13/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-33 in the reply filed on September 28, 2009 is acknowledged.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-28 and 30-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Andelman et al. (US Patent Application Publication no. 2002/0167782)
4. The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With regard to claims 1 and 14, Andelman discloses a flow through capacitor comprising a series stack of flow through capacitors with logic means that regulate charge and discharge cycles (abstract; page 7, paragraph 71).

With regard to claim 2, Andelman teaches multiple current collectors and a flow spacer shared among said current collectors (page 4, paragraph 46; page 7, paragraph 63).

With regard to claim 3, Andelman teaches wherein concentration fluid streams/bands may exist simultaneously within a given material layer (page 2, paragraph 18; page 5, paragraph 54; page 6, paragraph 56).

With regard to claim 4, Andelman further discloses a conductivity controlled valve between the at least two of the current collectors (see figure 12; page 3, paragraph 38; page 7, paragraph 65).

With regard to claim 5, Andelman teaches a fluid flow capacitor with parallel fluid flow between layers (page 5, paragraph 50), with multiple fluid flow paths wherein streams can have separate collection paths (page 6, paragraphs 59-60; page 7, paragraph 64; figure 7).

With regard to claim 6, Andelman discloses wherein fluid is manipulated to form adjacent purification and concentration streams that are separately collected without the need of a valve (page 2, paragraph 31; page 3, paragraph 38; page 5, paragraphs 50 and 54; page 6, paragraph 60).

With regard to claim 7, Andelman teaches wherein valves are individually triggered with charge cycles to produce a purified product stream (page 3, paragraph 38; page 7 paragraphs 65 and 71).

With regard to claims 8 and 9, Andelman discloses wherein the flow through capacitor system has a staging and power efficiencies of 50% or more (page 1, paragraphs 9-10; page 3, paragraphs 37-38).

With regard to claim 10, Andelman teaches wherein the charge cycles of individual cells are synchronized to correspond with a segment of purified water traveling in series through the cells (page 7, paragraph 71; page 9, paragraph 84).

With regard to claims 11 and 13, Adelman discloses wherein voltage is incremented as cells are sequentially powered in series (page 5, paragraph 50; page 9, paragraph 87; page 10, paragraph 90).

With regard to claim 12, Andelman teaches wherein the cells are powered by sequentially switching them together in parallel (page 7, paragraph 66; page 12, paragraph 110).

With regard to claim 15, Andelman discloses a DC to DC converter between the cells (page 7, paragraph 67).

With regard to claim 16, Andelman teaches wherein individual flow through capacitor cells are controlled in a timed sequence (page 6, paragraph 61; page 11, paragraph 104).

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With regard to claims 17 and 30, Andelman further discloses wherein the flow through capacitor system may be contained in a holder (page 6, paragraph 60; figures 8A-8D).

With regard to claims 18, 20 and 22, Andelman teaches wherein the charge cycles of individual cells are synchronized or out of phase by one or more seconds or between 0 to 360 degrees (page 7, paragraph 71; page 8, paragraph 79; page 9, paragraphs 84 and 85).

With regard to claim 19, Andelman discloses wherein charge cycles are actuated by a timer (page 7, paragraph 69).

With regard to claim 21, Andelman teaches wherein the amount of power may be reduced by at least 30% (page 12, paragraph 108).

With regard to claim 23, Andelman discloses wherein sequential operation of charge cycles follows the direction of flow (page 7, paragraph 71 to page 8, paragraph 78).

With regard to claim 24, Andelman teaches wherein the flow through capacitor system may be powered by a fuel cell (page 11, paragraph 99).

With regard to claim 25, Andelman discloses wherein some cells may be bypassed by means of a sensing circuit (page 7, paragraphs 65-66).

With regard to claims 26 and 28, Adelman further teaches wherein fluid flows from one or more cells are combined together through a manifold (page 6, paragraph 60; page 7, paragraph 66).

With regard to claim 27, Adelman discloses wherein the system achieves better than 40% purification (page 10, paragraph 96; page 11, paragraph 98).

With regard to claim 31, Andelman teaches wherein a plurality of current collectors bracket a stack of series electrode assemblies (figure 1; page 2, paragraph 12; page 4, paragraph 46).

With regard to claim 32, Andelman discloses wherein if wastewater exceeds a desired threshold concentration, charge or discharge current through the capacitor may be decreased in each cycle (page 9, paragraph 87).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 29 and 33 are rejected under 35 U.S.C. 103(a) as being obvious over Andelman, as applied to claim 16 above.

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8. The applied reference has a common assignee with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

With regard to claim 29, Andelman fails to explicitly teach wherein a dead volume due to the flow spacer is larger than the dead volume between the capacitor cell and the inside of the cartridge holder. However, Andelman does teach wherein dead volume is defined as the geometrically-calculated volume taken up by all the flow channels and flow spacer within the charge barrier flow-through capacitor cell, cartridge holder, and any connecting tubes, tanks, or piping (page 10, paragraph 91). The dead volume may be modified according to flow rate in order to create a lag period, which give the subsequent cell to wash out its purified, concentrated or feed water solution prior to



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triggering a rising or declining voltage cycle that initiates concentration or purification in that cell, of flow between cells of any length time (page 9, paragraph 85). Therefore one having ordinary skill in the art would have found it obvious to adjust the dead volume within the system, as taught by Andelman, in order to create a lag period, which give the subsequent cell to wash out its purified, concentrated or feed water solution prior to triggering a rising or declining voltage cycle that initiates concentration or purification in that cell, of flow between cells of any length time.

With regard to claim 33, Andelman fails to explicitly tech wherein at least one of said cells differs in size from at least one other of the cells. However, It has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *In re Rose* , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). Also see MPEP 2144.

### **Conclusion**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZULMARIAM MENDEZ whose telephone number is (571)272-9805. The examiner can normally be reached on Monday-Friday from 9am to 5pm.

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10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Michener can be reached on 571-272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/  
Primary Examiner, Art Unit 1795

/Z. M./  
Examiner, Art Unit 1795